



TETRA TECH

US EPA RECORDS CENTER REGION 5



PITT-05-13-057

June 14, 2013

Project 112G02120

Dept of the Navy
Naval Station Great Lakes
NAVFAC MW Code EV
Attn: Terese Van Donsel
201 Decatur Ave.
Building 1A
Great Lakes, IL 60088

Reference: CLEAN Contract No. N62470-08-D-1001
Contract Task Order F275

Subject: Final Remedial Investigation/Risk Assessment Report
Site 5 – Transformer Storage Boneyard
Naval Station Great Lakes
Great Lakes, Illinois

Dear Mrs. Van Donsel:

Please find attached two hard copies and two compact discs (CDs) of the subject report for your files. Copies have also been distributed to the other members of the Naval Station Great Lakes Team as indicated below.

Also attached is one copy of the responses to Illinois Environmental Protection Agency comments. If you have any questions regarding the report, please contact me at 412-921-7251.

Sincerely,

Robert F. Davis, P.E.
Project Manager

RFD/ak

Enclosure

cc: H. Hickey, Naval Station Great Lakes/NAVFAC Midwest (1 copy with 1 CD and 1 RTC)
B. Conrath, Illinois EPA (3 hard copies with 3 CDs and 1 RTC)
O. Thompson, EPA Region 5 (2 copies with 2 CDs and 1 RTC)
J. Trepanowski, Tetra Tech (letter only)
File 112G02120/CTO F275, Tetra Tech (1 copy with 1 CD and 1 RTC)
G. Wagner, Tetra Tech – Administrative Record (1 unbound copy with 1 CD)

Tetra Tech

661 Andersen Drive, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetrattech.com

**RESPONSE TO COMMENTS
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY COMMENTS
DATED FEBRUARY 21, 2012
DRAFT SITE 5 RI/RA REPORT
NAVAL STATION GREAT LAKES**

1) Acronyms – This page, identified in the Table of Contents as page ix, is missing in the copy being reviewed.

Response: The missing pages of Acronyms will be included in the redline strike out version of the report.

2) Section 4 – It appears that the eastern edge of the site has carbon tetrachloride and chloroform contamination in the surface soil, subsurface soil, and the groundwater (north-east corner). The extent of this contamination has only been defined in one direction, to the west. Additional investigation, consistent with the discussion in Section 3.1, is warranted to determine the full extent of this contamination. A manganese exceedance in the center of the site and a tetrachloroethene detection on the south-east edge of the site may also warrant additional investigation. Looking at the RI data for Site 9, there is also a tetrachloroethene detection in soil in sample NTC09-04-B, which is located just to the south-east of Site 5.

Response: We agree about the exceedances mentioned above. Tetra Tech, Navy, and Illinois EPA agreed that four additional soil borings and 4 new monitoring wells will be installed and sampled for VOCs along the east and southeast edge of the site in the area of Site 9 to delineate the extent of the contamination. This work was completed in December 2012. Monitoring well NTC09-MW02 is located approximately 280 feet southeast of the VOC contamination and will be used as the most downgradient location. It should be noted that the soil from this boring had a low detection of benzene at 2.8 ug/kg at a depth of 4 to 6 feet and manganese was detected in the groundwater from this monitoring well at a concentration of 558 ug/L. The results of the laboratory analysis from the December 2012 field work are attached to these response to comments and this information is being incorporated into the RI/RA report.

It should be noted that the exceedances described in Section 4 are compared to the minimum screening (most conservative) criteria. Section 4.4 compares results to the TACO criteria. Section 4 is determining the nature of the contamination present at Site 5, and Section 6 determines if there is a risk. Section 6 identified carbon tetrachloride and chloroform (degradation byproduct of carbon tetrachloride) in groundwater as a COPC and the risk assessment did identify carbon tetrachloride as a risk in groundwater.

The manganese exceedance in the center of the site is most likely related to the salt that is used to spread on the streets to prevent icing during the winter. No manganese was detected in the two monitoring wells due south of this location but manganese was detected at two orders of magnitude less in monitoring well NTC09-MW02 which is southeast of the site.

3) Section 4.2.1 – As noted in this section, the groundwater zones found in MW02 “were discontinuous with the water-bearing zones of the other four monitoring wells.” Therefore, contamination found in other wells would not be expected to be found in or to migrate to this one

and vice-versa. In fact, according to the data provided in the appendices, this well did not even yield samples for analysis for VOCs, SVOCs, or PAHs, which means there is no way to confirm this. However, this lack of sample analyses is not pointed out in the text of the report, on the figures, or in the tables, save Table 3-2. Please explain how this deviation from the SAP has not been identified and called out in the report. The report will need to be revised to include this information where appropriate.

It should also be noted that since MW02 did not yield samples for analysis for VOCs, SVOCs, or PAHs, the VOC contamination identified in MW05 has not been delineated in either the southerly or easterly (down gradient) directions. (The groundwater flow at Site 5 is reported in this RI as being in a south-easterly direction.) This will need to be rectified before the risk assessment can be completed.

Response: Section 3.2 was revised for the deviation from the work plan for the analysis of the groundwater from NTC05-MW02. Additional text on page 3-7 has been added in Section 3 of why NTC05-MW02 was only sampled for PCBs and metals. The following text was added: "Monitoring well NTC05-MW02 was not analyzed for VOCs, SVOCs and PAHs because the well did not yield enough water to obtain samples for these analytes. NTC05-MW02 was sampled for PCBs and metals, the primary contaminants of concern based on the historical use of the site (transformer boneyard)." A note mentioning that NTC05-MW02 was not sampled for VOCs, SVOCs and PAHs has been added to Figure 4-18 and Figure 4-21.

The field work in December 2012 included the collection of a groundwater sample from NTC05-MW02 that was analyzed for the VOCs. The results are provided as an attachment to these responses. VOCs were not detected in the groundwater sample from December 2012

For NTC05-MW-05, the Navy and Illinois EPA agree that four additional soil borings and 4 new monitoring wells will be installed and sampled for VOCs – see the response to Comment 2.

4) **Table 4-7** – This table should also provide the Class II groundwater screening values as they may be relevant for this site.

Response: The TACO Class II and Non-TACO Class II groundwater screening values have been added to Table 4-7.

5) **Figure 4-18** – The note in the Legend that states all values are expressed in µg/kg is incorrect. The values for groundwater are in µg/L.

Response: The legend in Figure 4-18 has been revised to express groundwater concentrations are in µg/L.

6) **Figures 4-19 and 4-20** – There are no values on this figure in mg/kg, so its reference is unnecessary in the Legend.

Response: The reference was removed from Figure 4-19. However, the reference was left on Figure 4-20 because sample location NTC05-SB09 [2 – 4] had a manganese detection that was reported in mg/kg.

7) Table 5-1 – Under VOCs, it appears carbon tetrachloride has been omitted from this table.

Response: Carbon tetrachloride has been added to Table 5-1.

8) Section 6.3.1 – The fifth bullet in the second paragraph and the second bullet in the sixth paragraph specify that the Regional Screening Level tables were used to develop surface and subsurface soil criteria. The Section 6.0 tables presenting these results reference the Regional Screening Level tables (RSL) dated 2004 and 2008. The RSL tables are updated quarterly and the most current version should be used.

Response: The most current version was used at the time the HHRA. The tables will be changed to reference the correct date.

9) Section 6.3.1 – In the third paragraph, a process for eliminating chemicals from evaluation for inhalation risk is presented. This is contrary to standard risk assessment practices that require all routes to be assessed for each COPC and the total risks and hazards from all pathways calculated and presented. However, it is not clear that this proposed elimination process was even necessary for this site. Suggest the Navy review the data, and if it was not necessary, remove the referenced paragraph altogether, otherwise, provide justification for deviating from standard risk assessment practice.

Response: The comparison of site soil data to USEPA Generic Inhalation SSLs for transfer from soil to air and Illinois EPA remediation objectives for inhalation was conducted according to the method presented in the Site 5 Work Plan (February 2012) that was reviewed and accepted by Illinois EPA which states in Section 1.2.1:

“The comparison of site soil data to USEPA Generic Inhalation SSLs for transfers from soil to air and Illinois EPA remediation objectives for inhalation will be used to identify whether a quantitative analysis of this exposure pathway is warranted. If the maximum soil concentration of a chemical exceeds the inhalation criteria, a quantitative evaluation of potential risks from inhalation will be performed. Otherwise, the risks associated with the inhalation pathway will be considered insignificant, and the exposure pathway will be eliminated from further evaluation.”

10) Section 6.3.2 – It states directly below the bulleted list that “constituents were identified as COPCs in surface soil because maximum concentrations exceeded USEPA ORNL RSLs or Illinois TACO risk-based screening levels”. It should point out that this does not take into account the screening values for the Soil Component of the Groundwater Ingestion Exposure Route. This comment applies to Section 6.3.3 as well.

Response: The text in Sections 6.3.2 and 6.3.3 was corrected to reflect this. The following was added to 6.3.2. and 6.3.3: “The Soil Component of the Groundwater Ingestion Exposure Route is addressed separately in Section 6.3.5.”

11) Section 6.3.3 – Please explain why the Aroclors were determined not to be chemicals of potential concern for subsurface soils.

Response: As is shown in Table 6-2, the maximum concentration of the Aroclors did not exceed the screening criteria, therefore they were determined not to be chemicals of potential concern for subsurface soils.

12) Section 6.3.4 – The last sentence on page 6-11 states the maximum concentration of benzo(a)pyrene was less than the Illinois TACO background value. That statement is incorrect. According to the results provided in Section 4 and Table 4-3, there are several samples with benzo(a)pyrene concentrations above the background value listed for surface soil. Please review the data and revise the text and the following table as necessary.

Response: The table in Section 6.3.4 (comparisons of maximum and average concentrations with Illinois EPA TACO Background concentrations) has been revised and updated. The sentence “The maximum concentration of benzo(a)pyrene (BaP) was less than the Illinois TACO background value in metropolitan area soil” was deleted.

13) Section 6.4.5 – The last paragraph briefly explains the source of the inhalation particulate emission factor. However, no mention is made of the derivation of the chemical-specific volatilization factors (VF). Please add VF to the discussion.

Response: Discussion about the VF has been added to this section. The following paragraph was added:

Ambient air concentrations resulting from the volatilization of COPCs from soil are chemical dependent and were calculated using the following equation from USEPA’s Soil Screening Guidance (1996):

$$VF = \frac{Q/C \times (3.14 \times D_a \times T)^{0.5} \times 10^{-4} \text{ (m}^2 \text{ / cm}^2 \text{)}}{(2 \times \rho_b \times D_a)}$$

and

$$D_a = \frac{[(\theta_a^{10/3} \times D_i \times H' + \theta_w^{10/3} \times D_w) / n^2]}{\rho_b \times K_d + \theta_w + \theta_a \times H'}$$

where:

VF	=	volatilization factor (m3-air/kg-soil)
Q/C	=	inverse of the mean concentration at the center of source (gm/m2-sec per kg/m3)
Da	=	apparent diffusivity, chemical specific, (cm2/sec)
T	=	exposure interval, exposure specific, (sec)
	=	dry bulk soil particle density (g/cm3)
	=	air-filled soil porosity (Lair/Lsoil)
Di	=	diffusivity in air, chemical specific, (cm2/sec)
n	=	total soil porosity (Lpore/Lsoil)
	=	water-filled soil porosity (Lair/Lsoil)
Dw	=	diffusivity in water, chemical specific, (cm2/sec)

Kd = soil-water partition coefficient, chemical specific
H' = dimensionless Henry's law constant, chemical specific

Chemical specific properties and other input values are presented in Appendix F spreadsheet files for construction worker risk associated with inhalation exposure from COPCs released from soil.

14) Section 6.4.5.2 – The Inhalation of Volatiles through Hypothetical Domestic groundwater Use discussion is incomplete. An equation for calculating “S”, the volatile chemical generation rate, should be added and defaults for EF, ED, AT, Ra, Ds, and Dt should be provided in the discussion paragraph.

Response: The equations for the “S” factor and the exposure assumptions that are incorporated into the risk calculations for inhalation of volatiles from groundwater released through showering have been added to the text of Section 6.4.5.2.

15) Section 6.7.2.3 – At the top of page 6-45, it again states that the maximum concentration of benzo(a)pyrene was less than the Illinois TACO background value. That statement is incorrect.

Response: The sentence: “The maximum concentration of BaP was less than the Illinois TACO background value in metropolitan area soil.” was deleted.

16) Section 6.7.4 – This section references Tables 6-17 and 6-18 for comparisons of soil concentrations to the soil to groundwater screening values. The reference should be to Tables 6-18 and 6-19.

Response: This reference was amended to refer to the correct tables.

17) Section 6.7.4 – The last sentence on page 6-47 states that it is unlikely that the concentrations of constituents in soil would adversely impact groundwater quality because the leaching targets are conservative and most of the soil concentrations are low. If that were truly the case, then there should not be any groundwater exceedances for any of the soil contaminants at this site. However, that is not the case. As an example, if one looks at the carbon tetrachloride concentrations on site, you will see that there are just a few minor exceedances in the surface soil (3), a greater number of exceedances in the subsurface soil (7), and finally an exceedance in the groundwater. (It should be noted that the groundwater contamination for this constituent has not been delineated.) This would tend to show that the carbon tetrachloride contamination has migrated/leached through the soil to the groundwater.

Response: The text was amended to reflect this point. **This sentence was deleted from the paragraph.**

18) Section 6.7.4 – This subsection should conclude with a statement regarding the uncertainty and whether the associated risks are over or underestimated, as is done for the other related subsections. The State believes site risks would be underestimated by not accounting for the soil to groundwater pathway.

Response: The following sentence was added; “The associated risks are underestimated due to the exclusion of the soil to groundwater pathway” or “It is possible that risks from exposure to soil may be underestimated by excluding the soil to groundwater pathway, however exposure to groundwater will not occur under current and/or future land uses.”

19) Section 7.1.1 – In the second paragraph, the next to last sentence needs clarification. Should it read “...were the PAHs that exceeded only the minimum USEPA screening criteria”?

Response: The sentence was changed to read as above.

20) Section 7.3 – The discussion here covers PCBs, PAHs, and metals detected in the soil and groundwater. It fails to discuss the VOCs that were also detected, specifically carbon tetrachloride and chloroform. This contamination needs to be discussed here as well.

Response: VOCs was added to the list because they were detected in the soil and groundwater and the following sentence was added to the end of the paragraph: “The VOCs were retained as COPCs in the risk assessment however only carbon tetrachloride was identified as a risk driver.”

21) Section 7.4 – Illinois EPA, as stated previously, recommends additional investigation to determine the extent of the carbon tetrachloride and chloroform contamination (both soil and groundwater) on the eastern edge of the property and possibly to delineate the manganese exceedance in the center of the site and the tetrachloroethene contamination found on the south-east edge of the property. Such investigation would require collection of samples outside of the currently drawn site boundaries, although still on Navy owned property.

Response: See the reponse to comment 2. An additional investigation was conducted and the results are being incorporated into the RI report. The results of the investigation are attached to this response.

22) Appendix A-2 – A number of the sample log sheets are missing information such as the date, PID readings, Sampled by, time, and XRF readings. Many do not have the sample type box or boxes checked. The sample log sheet for boring SB16 is missing all of these. This lack of documentation raises questions about the sample collection process.

Response: The missing information on the sample log sheets has been added by the field personnel.

23) Appendix A-3 – The monitoring well installation sheet for well MW02 does not provide the development method, the type of screen, the slot size and length of the screen, or the type of sand pack. Also, based upon the information that is provided, the screen length would have to be 15 feet. All of the other wells had 10 foot screens as is reported in the text. Please explain this discrepancy/deviation.

Response: The missing information on the monitoring well installation sheet has been added. The screen length for NTC05-MW02 is 15 feet as shown on the monitoring well installation sheet and on the tables in Sections 3 and 4. The following sentences will be

added to Section 3.2 "Monitoring well NTC05-MW02 was constructed with a 15 foot screen instead of a 10 foot screen because there was a one foot water bearing zone at the top of the screen interval and a 6-inch water bearing zone at the bottom of the screen interval with a tight clay in between. A larger screen interval was used to capture enough water bearing zone so a groundwater sample could be collected."

24) Appendix A-4 – The well development log sheet provided herein does not provide the specified information. The only entries on the page are water level readings and total depths of the wells. It should also be noted that MW02 appears to be significantly different than the other monitoring wells at this site.

Response: No well development log sheets were generated for the field work at Site 5 and this appendix will be deleted. The monitoring wells did not recharge very well and they were developed by pumping them dry, allowing them to recover (the rate of recovery was monitored) and repeating this process until they were clear or five well volumes had been removed. Each of the wells was pumped dry a minimum of five times to remove the fine suspended solids. Details of the well development process were described in Section 3.4.1 of the draft RI report.

25) Appendix A-8 – None of the chain-of-custody forms have a received by entry (name, date, time). Please provide properly filled out forms. In addition, there are numerous entry errors on the forms, which have not been properly corrected.

Response: The chain of custody forms in Appendix A are the forms that were completed during the field activities – at that time the laboratory did not receive the samples but the samples were being shipped to the laboratory by Federal Express. Chain of custody forms that have the received and signed by the laboratory can be found in Appendix C.

LOCATION	NTC05-MW02	NTC05-MW05	NTC05-MW06	NTC05-MW06	NTC05-MW07	NTC05-MW08	NTC05-MW09	NTC09-MW02	
SAMPLE ID	NTC05-GW02-02	NTC05-GW05-02	NTC05-GW06-01	NTC05-GW06-01-AVG	NTC05-GW06-01-D	NTC05-GW07-01	NTC05-GW08-01	NTC05-GW09-01	NTC09-GW02-02
SAMPLE DATE	20121215	20121215	20121217	20121217	20121217	20121217	20121217	20121216	20121215
SAMPLE CODE	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOP DEPTH	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999
BOTTOM DEPTH	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999	-9999
VOLATILES (UG/L)									
1,1,1-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
1,1,2-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
1,2-DIBROMOETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROPROPANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	2.4 J	1 UJ	1 UJ
2-HEXANONE	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
4-METHYL-2-PENTANONE	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	0.52 J	1 UJ	1 UJ
ACETONE	2 UJ	2 UJ	2 UJ	2 U	2 UJ	2 UJ	20 J	12 J	2 UJ
BENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMODICHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON DISULFIDE	1 U	2.6 J	1 U	1 U	1 U	1 U	2.9 J	1 U	1 U
CARBON TETRACHLORIDE	0.5 U	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	0.2 U	16	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	0.5 U	0.56 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,3-DICHLOROPROPENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CYCLOHEXANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DICHLORODIFLUOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYL ACETATE	0.8 U	0.88 U	0.8 U	0.805 U	0.81 U	0.77 U	1 U	0.98 U	0.78 U
METHYL CYCLOHEXANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.4 J	0.5 UJ
METHYLENE CHLORIDE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
NAPHTHALENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
STYRENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.31 J	0.5 U
TOLUENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.32 J	0.5 U	0.5 U
TOTAL XYLENES	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
TRANS-1,2-DICHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROFLUOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

LOCATION	NTC05-SB30-SS-0001	NTC05-SB30	NTC05-SB30-SS-0001-AVG	NTC05-SB30-SS-0001-D	NTC05-SB31	NTC05-SB32	NTC05-SB33	NTC05-SB34
SAMPLE ID	20121217	20121217	20121217	20121217	20121216	20121217	20121216	20121216
SAMPLE DATE	ORIG	AVG	DUP	DUP	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE CODE	SO	SO	SO	SO	SO	SO	SO	SO
MATRIX	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE TYPE	SS	SS	SS	SS	SS	SS	SS	SS
SUBMATRIX	0	0	0	0	0	0	0	1
TOP DEPTH	1	1	1	1	1	1	1	2
BOTTOM DEPTH								
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	85	85.5	86	81	88	89	78	
VOLATILES (UG/KG)								
1,1,1-TRICHLOROETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,1,2,2-TETRACHLOROETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,1,2-TRICHLOROETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,1-DICHLOROETHANE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
1,1-DICHLOROETHENE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,2,4-TRICHLOROENZENE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,2-DIBROMOETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,2-DICHLOROENZENE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,2-DICHLOROETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,2-DICHLOROPROPANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
1,3-DICHLOROENZENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
1,4-DICHLOROENZENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
2-BUTANONE	0.41 UJ	0.42 U	0.43 UJ	0.5 UJ	0.57 UJ	0.42 UJ	0.53 J	
2-HEXANONE	0.41 UJ	0.42 U	0.43 UJ	0.5 UJ	0.57 UJ	0.42 UJ	0.58 UJ	
4-METHYL-2-PENTANONE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
ACETONE	4.1 U	4.2 U	4.3 U	2600 J	5.7 UJ	4.2 U	37	
BENZENE	0.41 U	0.42 U	0.43 U	0.23 J	0.57 UJ	0.42 U	0.58 U	
BROMODICHLOROMETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
BROMOFORM	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
BROMOMETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
CARBON DISULFIDE	0.41 U	0.33 J	0.33 J	0.5 U	0.57 UJ	0.24 J	3.3	
CARBON TETRACHLORIDE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
CHLOROENZENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
CHLORODIBROMOMETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
CHLOROETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
CHLOROFORM	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
CHLOROMETHANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
CIS-1,2-DICHLOROETHENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
CIS-1,3-DICHLOROPROPENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
CYCLOHEXANE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
DICHLORODIFLUOROMETHANE	0.41 U	0.42 U	0.43 U	0.31 J	0.57 UJ	0.42 U	0.58 U	
ETHYLBENZENE	0.93 J	2.365	3.8 J	190	0.57 UJ	0.42 U	0.58 U	
ISOPROPYLBENZENE	0.2 U	0.21 U	0.22 U	7.7	0.28 UJ	0.21 U	0.29 U	
METHYL ACETATE	1.4 U	1.155 U	0.91 U	0.5 U	1.2 U	0.97 U	1.1 U	
METHYL CYCLOHEXANE	0.41 U	0.42 U	0.43 U	0.44 J	0.57 UJ	0.42 U	0.67 J	
METHYL TERT-BUTYL ETHER	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
METHYLENE CHLORIDE	0.79 J	0.5025	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
NAPHTHALENE	0.41 UJ	0.42 U	0.43 UJ	0.5 UJ	0.82 J	0.42 UJ	0.58 UJ	
STYRENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
TETRACHLOROETHENE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
TOLUENE	1.1 J	1.5	1.9	50	0.57 UJ	0.42 U	0.58 U	
TOTAL XYLENES	5.3 J	13.65	22 J	1400 J	0.85 UJ	0.63 U	0.36 U	
TRANS-1,2-DICHLOROETHENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
TRANS-1,3-DICHLOROPROPENE	0.41 U	0.42 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U	
TRICHLOROETHENE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
TRICHLOROFLUOROMETHANE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	
VINYL CHLORIDE	0.2 U	0.21 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U	

LOCATION	NTC05-SB30-SS-0001	NTC05-SB30	NTC05-SB30-SS-0001-AVG	NTC05-SB30-SS-0001-D	NTC05-SB31	NTC05-SB32	NTC05-SB33	NTC05-SB34
SAMPLE ID	20121217	20121217	20121217	20121217	NTC05-SB31-SS-0001	NTC05-SB32-SS-0001	NTC05-SB33-SS-0001	NTC05-SB34-SS-0102
SAMPLE DATE	ORIG	AVG	DUP	DUP	20121216	20121217	20121216	20121216
SAMPLE CODE	SO	SO	SO	SO	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SAMPLE TYPE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	1
BOTTOM DEPTH	1	1	1	1	1	1	1	2
MISCELLANEOUS PARAMETERS (%)								
PERCENT SOLIDS	85	85.5	86	86	81	88	89	78
VOLATILES (UG/KG)								
1,1,1-TRICHLOROETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,1,2,2-TETRACHLOROETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,1,2-TRICHLOROETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,1,2-TRICHLOROTRIFLUOROETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,1-DICHLOROETHANE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
1,1-DICHLOROETHENE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,2,4-TRICHLOROENZENE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,2-DIBROMO-3-CHLOROPROPANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,2-DIBROMOETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,2-DICHLOROBENZENE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,2-DICHLOROETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,2-DICHLOROPROPANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
1,3-DICHLOROBENZENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
1,4-DICHLOROBENZENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
2-BUTANONE	0.41 UJ	0.42 U	0.43 UJ	0.43 UJ	0.5 UJ	0.57 UJ	0.42 UJ	0.53 J
2-HEXANONE	0.41 UJ	0.42 U	0.43 UJ	0.43 UJ	0.5 UJ	0.57 UJ	0.42 UJ	0.58 UJ
4-METHYL-2-PENTANONE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
ACETONE	4.1 U	4.2 U	4.3 U	4.3 U	2600 J	5.7 UJ	4.2 U	37
BENZENE	0.41 U	0.42 U	0.43 U	0.43 U	0.23 J	0.57 UJ	0.42 U	0.58 U
BROMODICHLOROMETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
BROMOFORM	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
BROMOMETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
CARBON DISULFIDE	0.41 U	0.33 J	0.33 J	0.33 J	0.5 U	0.57 UJ	0.24 J	3.3
CARBON TETRACHLORIDE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
CHLOROBENZENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
CHLORODIBROMOMETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
CHLOROETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
CHLOROFORM	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
CHLOROMETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
CIS-1,2-DICHLOROETHENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
CIS-1,3-DICHLOROPROPENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
CYCLOHEXANE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
DICHLORODIFLUOROMETHANE	0.41 U	0.42 U	0.43 U	0.43 U	0.31 J	0.57 UJ	0.42 U	0.58 U
ETHYLBENZENE	0.93 J	2.365	3.8 J	3.8 J	190	0.57 UJ	0.42 U	0.58 U
ISOPROPYLBENZENE	0.2 U	0.21 U	0.22 U	0.22 U	7.7	0.28 UJ	0.21 U	0.29 U
METHYL ACETATE	1.4 U	1.155 U	0.91 U	0.91 U	0.5 U	1.2 U	0.97 U	1.1 U
METHYL CYCLOHEXANE	0.41 U	0.42 U	0.43 U	0.43 U	0.44 J	0.57 UJ	0.42 U	0.67 J
METHYL TERT-BUTYL ETHER	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
METHYLENE CHLORIDE	0.79 J	0.5025	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
NAPHTHALENE	0.41 UJ	0.42 U	0.43 UJ	0.43 UJ	0.5 UJ	0.82 J	0.42 UJ	0.58 UJ
STYRENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
TETRACHLOROETHENE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
TOLUENE	1.1 J	1.5	1.9	1.9	50	0.57 UJ	0.42 U	0.58 U
TOTAL XYLENES	5.3 J	13.65	22 J	22 J	1400 J	0.85 UJ	0.63 U	0.36 U
TRANS-1,2-DICHLOROETHENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
TRANS-1,3-DICHLOROPROPENE	0.41 U	0.42 U	0.43 U	0.43 U	0.5 U	0.57 UJ	0.42 U	0.58 U
TRICHLOROETHENE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
TRICHLOROFLUOROMETHANE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U
VINYL CHLORIDE	0.2 U	0.21 U	0.22 U	0.22 U	0.25 U	0.28 UJ	0.21 U	0.29 U